

SAFE HEALTHCARE

HandWash Monitoring Bracelet

Background Market Research:

1. Hospital Facilities Market

Hospitals are collaborating with medical technology companies to adopt the latest technologies for healthcare delivery. The use of AI in healthcare facilities solution is on the rise.

The US hospital facilities market size was valued at US\$1.3 trillion in 2021 and is expected to grow at a compound annual growth rate (CAGR) of 7.62% from 2022 to 2030. The growing impetus for better

patient care and the entry of novel healthcare technology is expected to increase the demand for well-equipped hospitals in the coming years^[1].

The public/community hospitals segment dominated the market with a share of 52.2% in 2021. Community hospitals hold the highest number of patient beds and offer a wide variety of care areas/medical issues through their different services. They are non-profit organizations meant for public services and are supported by various philanthropic groups, businesses, and crowd-funded societies. The state-owned & federal hospitals segment held the second-largest share of the market. The growing number of private hospitals and consolidation of healthcare facilities are expected to bolster the growth of the segment.

2. Hand Hygiene Monitoring System Market

Hand hygiene is particularly vital in healthcare facilities, clinics, and hospitals. The WHO and many other organizations have issued guidelines and recommendations to improve hand hygiene on medical sites and are advised to use hand hygiene monitoring systems.

After numerous management efforts, hygiene monitoring systems are introduced, which send notifications and alerts to individuals for washing their hands and maintaining hygiene. A hand hygiene monitoring system can be a badge or wristband worn by the healthcare worker with a sensor at the patient bed, which detects the level of hygiene.

The worldwide hand hygiene system market is valued at USD 4591.96 Million in 2022. The market is further expected to surpass a valuation of USD 11,965.57 Million by end of 2032. The hand hygiene monitoring system is likely to grow with a CAGR of 9.8% in the forecast period^[2].

North America is expected to be the most dominating market for the hand hygiene monitoring system market due to the rise in per capita expenditure on healthcare and technological advancements. Western Europe is expected to witness fast growth in the global hand hygiene monitoring system market.

Market by end users:

- Hospitals - The hospital segment is anticipated to see growth in hand hygiene monitoring systems due to the large need for maintenance of hygiene. After Covid-19 the hospital segment is anticipated to increase spending on the maintenance of hand hygiene in order to prevent the transmission of contaminants. These institutes are shifting to automatic hand hygiene monitoring systems from prior manual monitoring. [Source](#)
- Dialysis Centers
- Clinics

3. Retail clinics market

The global **retail clinics market** is expected to a CAGR of **9.6%** by accumulating a market value of **US\$ 8.05 Billion** by the end of 2028^[3].

The growth of the market can be attributed to:

- Demand for retail clinics is making basic care more accessible and affordable along with consumers' inclination towards the adoption of retail clinics services is expected to rise.

- The increasing demand for conducting clinical trial along with making it accessible for a larger patient pool is creating lucrative opportunities for retail clinics market.
- Lack of healthcare sectors to cater to a larger patient pool has created an urgent need for retail clinics market.

Increasing prevalence of multiple diseases, rising focus on healthcare, increasing geriatric population, rising burden on other conventional healthcare institutions, increasing healthcare expenditure and spending, and growing popularity of retail clinics are some major factors that govern the retail clinics market potential.

During the COVID-19 pandemic, from 2020 to 2022, the demand for retail clinics observed a massive demand owing to the increasing patient pool contracting the virus across the globe. Moreover, the convenience and affordability offered by retail clinics in comparison to traditional healthcare sectors is creating lucrative opportunities for the market.

The retail clinics market in North America is anticipated to have a bright outlook over the forecast period and is expected to account for a significant market share by 2028.

Growth Drivers

- **Saves time and human resources:** Caretakers in hospitals and medical facilities are often preoccupied with a lot workload and multitasking. The demand for hand hygiene monitoring systems is increasing because of their systematic and accurate control, significant reduction in the spread of infection, easy implementation, and cost-effectiveness. The implementation of hand hygiene monitoring systems has increased, by almost more than five folds reducing the number of cases of infectious diseases. Patient satisfaction and trust are the underlining benefits of hand hygiene monitoring systems.
- **Quantitative monitoring:** These systems allow quantitative monitoring which cost only for installation and maintenance. The savings cost of training and employing additional human resources is a benefit for the organization. The creation of safer workplaces and lower cost of manual monitoring are benefits of hand hygiene monitoring systems.
- **Government recommendation:** The global hand hygiene monitoring system market is expected to foresee exponential growth owing to the increasing implementation of hand hygiene monitoring systems by hospitals and healthcare units. Recommendations and guidelines from government units and safety precautions laid by healthcare organizations subtly pressurize healthcare clinics and hospitals to implement hand hygiene monitoring systems. The number of players entering the hand hygiene monitoring systems market has increased, with advanced and latest technologies and features.

Target Market

1. Number of Hospitals:

- A. **United States:** According to the American Hospital Association (AHA), in total, there are about **6,093 hospitals** in the United States.

Table: Number of Hospitals in the US

Total Number of All U.S. Hospitals	6,093
Number of U.S. Community Hospitals	5,139
Number of Nongovernment Not-for-Profit Community Hospitals	2,960
Number of Investor-Owned (For-Profit) Community Hospitals	1,228
Number of State and Local Government Community Hospitals	951
Number of Federal Government Hospitals	207
Number of Non-federal Psychiatric Hospitals	635
Other Hospitals	112
Total Staffed Beds in All U.S. Hospitals	920,531
Staffed Beds in Community Hospitals	789,354
Intensive Care Beds in Community Hospitals <i>(FY2019 data to be updated 2/21)</i>	
Medical-Surgical Intensive Care Beds in Community Hospitals	59,281
Cardiac Intensive Care Beds in Community Hospitals	15,778
Neonatal Intensive Care Beds in Community Hospitals	23,096
Pediatric Intensive Care Beds in Community Hospitals	5,037
Burn Care Beds in Community Hospitals	1,280
Other Intensive Care Beds in Community Hospitals	7,887
Total Admissions in All U.S. Hospitals	33,356,853
Admissions in Community Hospitals	31,393,318
Total Expenses for All U.S. Hospitals	\$1,213,881,001,000
Expenses for Community Hospitals	\$1,102,282,383,000
Number of Rural Community Hospitals	1,796

Number of Urban Community Hospitals	3,343
--	--------------

Source: American Hospital Association

- B. **Canada:** In 2022, there are **1300 hospitals** in Canada, for a total population of 37.6 million people. Hospitals usually represent the highest health expenditure of a country. Health expenditure as a share of GDP was rather high in Canada, and most of these health expenses were spent on hospitals. The hospital density in Canada stood at roughly 19 hospitals per million people. Although the concentration of hospitals was not especially high in comparison to other countries, Canada's was higher than in the U.S. Despite this, the density of hospital beds in Canada decreased over the years. In 2019, per 1,000 people, there were five hospital beds less than three decades ago. On the other hand, employment increased in Canadian hospitals. Canadian hospitals notably employed over 644 thousand people in 2019^[4].

Among Canadian provinces, Ontario had the largest number of hospitals with around 390 establishments, as of 2021.

Figure: Number of hospitals in Canada, by provinces

Source: Statista

2. Urgent care centers in the US

- A. **United States:** The number of urgent care centers in the US has now topped 9,000, according to a report from an industry group^[5]. The number of centers has increased steadily each year from 2013, when the total number of urgent care centers was 6,100. Both urgent care centers and retail clinics have continued to grow across the U.S. as patients look for convenience and affordability, creating competition with traditional hospital and physician practice services.

3. Healthcare staff

A. United States:

There were 22 million workers in the health care industry, one of the largest and fastest-growing sectors in the United States that accounts for 14% of all U.S. workers, according to the Census Bureau's 2019 American Community Survey (ACS)^[6].

In 2019, around seven million people worked at general medical, surgical or specialty hospitals; some two million at outpatient care centers and about 1.8 million worked at nursing care facilities.

States with over 500,000 health care practitioners and technicians include California, Florida, New York, and Texas. However, the overall distribution of health care related workers varied by state.

For example, there were about six health care practitioners and technicians per 100 civilian-employed workers ages 16 and over in the United States.

While about 58,000 workers in West Virginia were health care practitioners and technicians, they accounted for nearly 8 out of 100 of the state's workers ages 16 and over. In the District of Columbia, 4 out 100 workers, or just over 17,000, worked as health care practitioners^[7].

The number and distribution of health care support workers also varies across the United States.

California had 718,011 health care support workers — the largest number of any state — accounting for about 4 out of 100 workers in the state.

In contrast, nearly 5 out 100 workers (454,514) in New York had health care support jobs. Nearly 2 out 100 workers (just over 23,000) in Puerto Rico worked in a health care support occupation.

B. Canada:

In 2008, the number of employees in Canadian hospitals stood at nearly 566 thousand. By 2021, this number had increased to over 662 thousand.

Nurses in Canada

In 2019, there were 439,975 regulated nurses with an active licence. The distribution of nurses by licence type is as follows:

- o 300,669 registered nurses (RNs) — a growth of 1.1% from 2018.
- o 6,159 nurse practitioners (NPs) — a growth of 8.1% from 2018, the largest increase of all the nursing designations. In fact, NPs have had the highest growth rate of all nurses every year over the past 5 years (2015-2019).
- o 127,097 licensed practical nurses and registered practical nurses (LPNs and RPNs) — a growth of 3.6% from 2018 (4,497 more than the previous year, representing the greatest growth by number among all nursing designations)
- o 6,050 registered psychiatric nurses— a growth of 0.4% from 2018.

The overall growth rate of the regulated nursing population eligible to practice was approximately 1.9%. However, the nursing workforce (those who are employed) has diminished by 1.5% from 2018-2019. The Canadian population, meanwhile, has grown 1.4% (based on 2017-2018 data).

In Ontario, around 104,980 nurses were part of the registered nursing workforce, while in Quebec there were almost 73,340 nurses^[8].

Number of nurses in registered nursing in Canada in 2020, by province

Percentage of regulated nurses by employment setting^[9]:

- o 58.5% worked in a hospital
- o 15.6% worked in community health
- o 15.5% worked in a nursing home/long-term care
- o 10.5% worked in other employment settings

4. Number of Senior Living Units:

- A. **United States:** By 2050, it is estimated that over a fifth of the population in the United States will be 65 years or older, compared to only 15.6% today. In 2019, the not-for-profit senior living organization National Senior Campuses reported over nearly 21,000 senior living units across the United States^[10].
- B. **Canada:** In 2017, the Canada Mortgage and Housing Corporation (CMHC) estimated around 258,000 senior housing units across Canada. In the eight years between 2008 and 2017, the supply grew by about 6.9% which appears quite good^[11].

5. Number of long-term care homes:

- A. **United States:** There are 65,600 regulated long-term care facilities in the U.S. About 70% of seniors will need some type of long-term care.

Long-term care services were provided by:

- § 28,900 assisted living and similar residential care facilities
- § 15,600 nursing home facilities
- § 12,200 home health agencies
- § 4,600 adult day care centers
- § 4,300 hospice agencies^[12]

- B. **Canada:** In Canada, there are 2,076 long-term care homes. Overall, 54% of LTC homes in Canada are privately owned and 46% are publicly owned. In Canada, there are 198,220 long-term care beds^[13]. The figure below represents long-term care beds per 1,000 seniors.

Source: *Canadian Institute for Health Information*

Opportunities and Threats

Opportunities

- **Growing focus on hygiene:** The demand for hand hygiene monitoring systems is increasing because of their systematic and accurate control, significant reduction in the spread of infection, easy implementation, and cost-effectiveness. The implementation of hand hygiene monitoring systems has increased, by almost more than five folds reducing the number of cases of infectious diseases. Patient satisfaction and trust are the underlining benefits of hand hygiene monitoring systems. These systems allow quantitative monitoring which cost only for installation and maintenance. The savage cost of training and employing additional human resources is a benefit for the organization. The creation of safer workplaces and lower cost of manual monitoring are benefits of hand hygiene monitoring systems. Recommendations and guidelines from government units and safety precautions laid by healthcare organizations subtly pressurize healthcare clinics and hospitals to implement hand hygiene monitoring systems.

Technology Advancement: Technological advancements, such as Artificial Intelligence (AI), electronic health records, mHealth, telemedicine/telehealth, sensors & wearable technology,

wireless communication systems, remote-monitoring, robotics, and other notable innovations, are expected to drive the hand hygiene market during the forecast period.

- **Post-pandemic care:** Post pandemic patients, healthcare providers and staff are more focused on hand hygiene to prevent the infection and hospitals are increasing their spending on such systems to provide value-added services for their patients.

Threats

- **Lack of Awareness:** One of the major restraints in the penetration of hand hygiene monitoring systems is a lack of awareness about usage and operations. The incorrect patterns of behavior and heavy workloads are often considered challenges that limit the penetration of hand hygiene monitoring systems.
- **Lack of technological knowledge:** Another major factor which might restrain the growth is the lack of technically equipped personnel for handling the technology well. It requires imparting the technology with basic tenets of the monitoring system through basic and advanced certification courses and training programs.
- **Growing competition:** Multiple companies are introducing various hand hygiene monitoring systems which might not provide smart analysis/insights, but hospitals / small clinics do not understand the difference, which creates greater competition for companies like Safe Healthcare.

Business Model Viability

Regulations: Low

There are no such regulations which can impact the operations of Safe Healthcare.

Competition: Low to Medium

Currently, there are a few systems that offer some form of integrated handwashing compliance tracking and monitoring. These systems are often prohibitively expensive for health care facilities and come with large up-front capital expenditure requirements. Current competitors also do not satisfy two important features, the ability to push real time reminders to prompt handwashing if it is missed, and the ability to integrate data/analytics with existing software programs/systems. These factors are critical for customer adoption.

The competitive advantage for Safe Healthcare will come from the innovative use of existing and inexpensive hardware technologies, as well as a powerful data-driven back-end created specifically to solve this substantial issue within the healthcare industry. The ability to provide reliable and audible hand-washing verification, and real-time prompting without the need for expensive resources to manually complete this task will be a huge asset for healthcare organizations and a distinct competitive advantage for Safe Healthcare. Health care systems have often invested heavily in legacy technology systems and the chance of adoption of an entirely new system is small. Safe Healthcare will build competitive advantage by connecting data from and to existing systems and empower the tools already being used by the industry.

CUSTOMER SEGMENT(S)

Segment 1

Segment Name:	Hospital Administration
Age:	15 to 64 years
Location:	North America
Problem:	Hand washing for hospital staff is extremely important as it ensures safe and health environments for patients. In some jurisdictions, they have implemented a 100% hand washing compliance standard. To ensure adherence, hand washing auditors are hired to manually audit each hospital staff member to confirm if they are washing their hands at the proper check points. In one region alone, hundreds of nurses have been hired to audit costing between \$300K to \$500K to do a tedious and manual job that results in biased data and doesn't ensure 100% compliance.
Value Prop:	Safe Healthcare will enable: · Hospitals and other critical care facilities to track, verify, and enforce hand-washing requirements without the need for extremely expensive and unnecessary in-person auditors. · Users to receive mobile/text reminders after they have entered a new room and if they have not washed their hands within a pre-determined amount of time. · Administrators to set rules for hand-washing within the system · Administrators to analyze and display data in a variety formats, including spotting policy violations and % adherence to the requirements.

Segment 2

Segment Name:	Healthcare staff
Age:	NA
Location:	USA and Canada

Problem:	Hand washing for hospital staff is extremely important as it ensures safe and health environments for patients. In some jurisdictions, they have implemented a 100% hand washing compliance standard. To ensure adherence, hand washing auditors are hired to manually audit each hospital staff member to confirm if they are washing their hands at the proper check points. In one region alone, hundreds of nurses have been hired to audit costing between \$300K to \$500K to do a tedious and manual job that results in biased data and doesn't ensure 100% compliance.
Value Prop:	Safe Healthcare will enable: · Hospitals and other critical care facilities to track, verify, and enforce hand-washing requirements without the need for extremely expensive and unnecessary in-person auditors. · Users to receive mobile/text reminders after they have entered a new room and if they have not washed their hands within a pre-determined amount of time. · Administrators to set rules for hand-washing within the system · Administrators to analyze and display data in a variety formats, including spotting policy violations and % adherence to the requirements.

CUSTOMER DISCOVERY

Conduct initial discussions with 3-5 potential customers for the proposed solution with the intent of clarifying/understanding the problem and the opportunity for a solution.

Sample questions:

1. Are you currently addressing this problem?
2. If so, how are you addressing the problem?
3. If not, do you believe this is a problem?
4. What does it cost you to solve this problem today? (or what does it cost to not have a solution today)
5. What would an ideal solution/product/services look like?
6. How much would you pay for it?
7. Where do you look for new ideas/solutions/technologies?

8. How do you or how does your organization typically buy?
9. Who makes the final buying decision?

Name: Dr. Foster Hull Company: <u>Southern California Hospital Culver City</u> Title: Founder	Responses:
Name: Stanley Patterson Company: <u>Sierra Vista Family Medical Clinic</u> Title: Medical Director	Responses:
Name: Company: Title:	Responses:

Southern California Hospital Culver City (<https://www.sch-culvercity.com/>) : It is a full-service, acute care hospital with a 24/7 emergency department and nationally recognized patient safety. The hospital employ lot of healthcare workers which need regular hand sanitization services. The healthcare facility could be a potential customer of Safe Healthcare.

Sierra Vista Family Medical Clinic's mission is to deliver a quality, cost-effective, and personalized health care experience to patients. The clinic attends multiple patients in a day and would be benefitted from ClinicSentry to follow-up with patients and remind them about their upcoming appointment and schedule.

COMPETITIVE ANALYSIS

Develop a high-level competitive analysis of 3-5 competitors using the format below. Can include direct competitors, indirect competitors, etc.

Company	Product/Service Mix	Pricing	Target Customer(s)	Channels

<u>CenTrak</u>	CenTrak, Inc. provides healthcare devices. The Company offers asset tracking and management, nurse call automation, temperature monitoring, staff security, and infection control devices. Electronic hand hygiene compliance monitoring: Through accurate RTLS technology, CenTrak identifies opportunities for performing hand hygiene, collects hand hygiene events, and delivers actionable insights to staff	Free demo available Pricing not available	Healthcare facilities Clinics	Marketing: Social media channels (Facebook, LinkedIn, Twitter, YouTube); Blogs; Videos; Case Studies; Publications; Brochures; Webinars Sales: Through company website
<u>Ecolab</u>	Ecolab Inc. develops and offers services, technology and systems that specialize in treatment, purification, cleaning, and hygiene of water in wide variety of applications. The Ecolab® Hand Hygiene Compliance Monitoring System allows you to accurately record hand hygiene events by individual, holding each healthcare worker accountable for their compliance and providing actionable guidance for improvement.	NA	Healthcare facilities	Marketing: Social media channels (Facebook, Instagram, LinkedIn, Twitter, YouTube); News Articles Sales: Through company website

Intelligent Observation	Intelligent Observation provides an automated hand hygiene tracking system that improves compliance and reduces the risk of infection Its hand hygiene compliance monitoring system helps hospital staff to accurately record hand hygiene for healthcare staff and patients. Intelligent Observation is revolutionizing the healthcare industry with an affordable, accurate and easy-to-use hand hygiene monitoring system. Intelligent Observation uses near-field magnetic induction (NFMI) technology to safely and accurately record every single hand hygiene compliance event in a healthcare facility 24/7/365.	NA	Healthcare facilities	Marketing: Social media channels (LinkedIn); News Articles Sales: Through company website: Initiate a demo
--------------------------------	--	----	-----------------------	--

[1] <https://www.grandviewresearch.com/industry-analysis/us-hospital-facilities-market>

[2] <https://www.factmr.com/report/2277/hand-hygiene-monitoring-system-market>

[3] <https://www.futuremarketinsights.com/reports/retail-clinics-market>

[4] <https://www.statista.com/topics/7575/hospitals-in-canada/>

[5]

<https://www.fiercehealthcare.com/practices/now-more-than-9-000-urgent-care-centers-u-s-industry-report-says>

[6] <https://www.census.gov/library/stories/2021/04/who-are-our-health-care-workers.html>

[7] <https://www.census.gov/library/stories/2021/04/who-are-our-health-care-workers.html>

[8] <https://www.statista.com/statistics/496935/total-registered-nursing-canadian-workforce-by-province/>

[9] <https://www.cna-aiic.ca/en/nursing/regulated-nursing-in-canada/nursing-statistics>

[10] <https://www.statista.com/topics/4817/housing-for-seniors-in-the-us/#editorsPicks>

[11] <https://covcommunications.com/the-occupancy-reality-in-canadian-senior-living-communities/>

[12]

<https://www.singlecare.com/blog/news/long-term-care-statistics/#:~:text=There%20are%2065%2C600%20regulated%20long.type%20of%20long%2Dterm%20care.>

[13]

[https://www.cihi.ca/en/how-many-long-term-care-beds-are-there-in-canada#:~:text=In%20Canada%2C%20there%20are%202%2C076.of%20February%2028%2C%202021\).](https://www.cihi.ca/en/how-many-long-term-care-beds-are-there-in-canada#:~:text=In%20Canada%2C%20there%20are%202%2C076.of%20February%2028%2C%202021).)